

THE DEPARTMENT OF EDUCATION

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LESSONS IN AGRICULTURE

CIRCULAR 13E

A SUPPLEMENT TO NO. 2 SCHOOL CHART 13E

THE BEST TIME TO SOW SPRING GRAINS



A School Garden in Oxford County.

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LESSONS IN AGRICULTURE

CIRCULAR 13 E

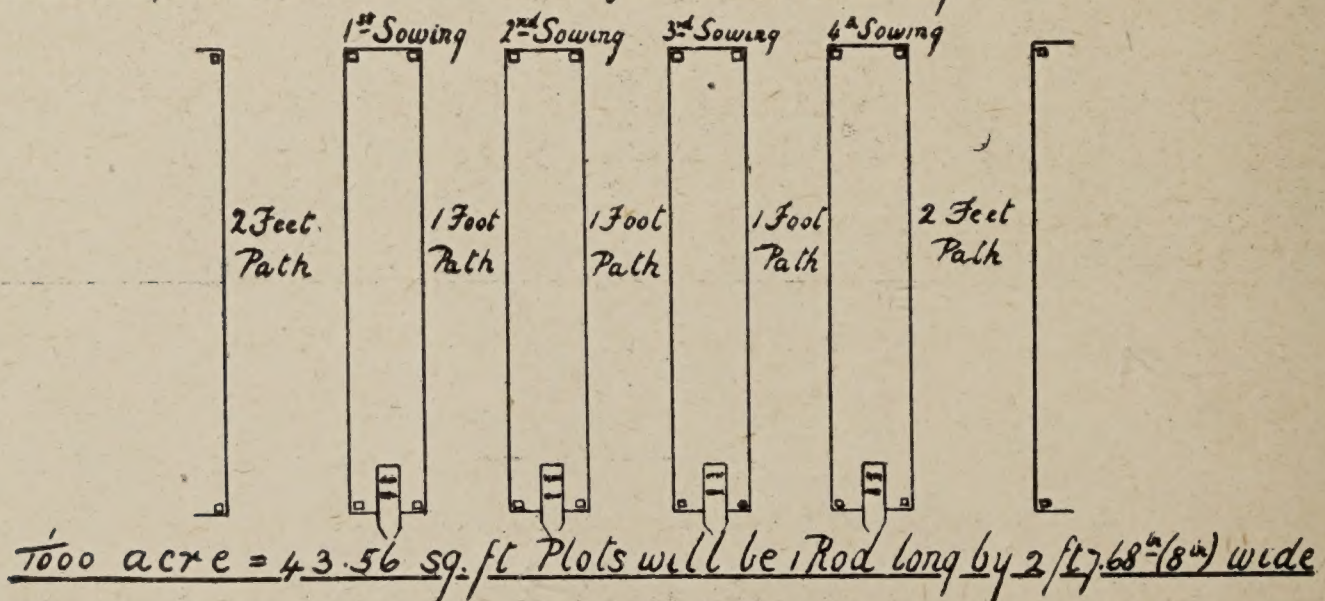
A SUPPLEMENT TO SCHOOL CHART 13 E

The Best Time to Sow Spring Grains

In *School Chart 13E* an account is given of a series of experiments carried on at the Provincial Experimental Farm at the Ontario Agricultural College, Guelph, to find out what advantages or disadvantages there are in early or late seeding of Wheat, Barley, Oats and Peas. The results of the experimental work are recorded on the chart in a diagram.

School Experiment to Determine the Best Date of Seeding

On Four Plots of 1000 acre each, Using Wheat, Barley, Oats or Peas.



While the facts and figures, determined through five years' careful work on the Experimental Farm are of great interest and value to every farmer in Ontario and do not need to be repeated, it has been thought that a little experi-

ment for the schools along similar lines might be of interest and value to all pupils who live in the country and attend the rural schools. Accordingly arrangements have been made through the *Schools' Division of the Experimental Union* to send out for the work of 1912 packages of selected O. A. C. No. 21 Barley, sufficient to sow four 1/1000 acre plots. This barley is generally recognized as the best variety grown at the present time in the province. Through this experiment in the School Gardens of Ontario it may now be tested in many new localities while being used to answer a problem in agriculture.

In subsequent years samples of selected wheat, oats, and peas will be distributed also for this experiment.

ORIGIN OF O. A. C. No. 21 BARLEY

This barley is an improved variety of Mandscheuri barley which was first grown on the Experimental Farm twenty-two years ago last spring. From the beginning it proved itself of surpassing quality, and through its distribution by the Experimental Union upwards of half a million acres are now grown annually in Ontario. This from the one pound of grain imported from Russia in 1879.

Good as this Mandscheuri barley might be, there was still room for improvement!

In the spring of 1903, 9,972 selected grains of Mandscheuri barley were planted by hand at equal distances apart in a plot in the Experimental Farm. When the plants were mature they were carefully examined and 33 of the most promising ones were selected, harvested and threshed separately. In 1904 the seed of these 33 plants was sown separately in rows, and these rows were carefully examined and the most important ones harvested and threshed separately. From that time forward, only the best of these strains were grown in the tests as follows: 14 in 1905, 8 in 1906, 7 in 1907, and three in each of the past four years. During the first year (1904), the different strains went by numbers, and the one which has proven to be the best is what is now known as the O. A. C. Number 21. This variety was distributed throughout Ontario in connection with the Experimental Union, beginning in the year 1906, and has made a very excellent record. In each of the past five years it has actually given better results than the original Mandscheuri variety in yield of grain, in freedom from rust, and in both length and strength of straw in the co-operative tests throughout Ontario. It is quite an easy matter to distinguish the grain of the O. A. C. Number 21 from that of the Mandscheuri variety.

In the spring of 1909, about 20,000 bushels of the O. A. C. No. 21 barley were traced in Ontario as the result of the pound lots which were distributed for experimental purposes in connection with the Experimental Union. This is the power of one grain! One grain in the spring of 1903 and 20,000 bushels in the spring of 1909!

The School Experiment.—The sample distributed through the Schools' Division is the progeny of that grain. Through small experimental plots in a few hundred Ontario school grounds, there is hardly a limit to the possibilities of barley improvement in this Province. Several schools that had plots of *O. A. C. No. 21* last year (1911) report that their barley was considered the best in the locality.

Preparation of Ground and Sowing of Seed.—For these things the teacher should secure the advice and help of the trustees or some of the parents who are interested in school work. If a piece of ground has not been prepared on the school grounds the previous fall, or cannot very well be got ready in time for the first and earliest planting a plot should be secured in some well-cultivated field adjoining the school grounds.

Previous to the actual planting, measuring tools, stakes, labels and fencing should be arranged for. The greatest precaution should be taken to have the plot protected from stray animals. There is no more disheartening experience in school gardening—unless it be acts of vandalism—than to have stray cattle destroy all one's work and hopes in a single night.

Measure the plots exactly, drive the stakes at the corners, stretch a string around them and sow the seed within this, raking it to a depth of about one inch. Label the plot showing what has been done. If the grain is sowed in drills, the pupils will be able to keep down the weeds better than if sowed broadcast.

Arrangements re Holidays.—Previous to the breaking up of school, definite arrangements should be made with the trustees or some of the older pupils for the harvesting of the crop. This should be done at the right time and the sheaves securely tied and hung up where they will not come to harm from mice or birds or from the weather. They will be needed when school opens, to estimate yields, length of straw and amount of rust if these calculations have not been made at the time of harvesting. If the sheaves are to be used for an exhibit at the local fall fair or the school fair, the threshing will need to be delayed.

PRACTICAL SCHOOL STUDIES

Keeping Records.—It is not expected that all the topics outlined below for study can be covered by any school which undertakes this work. They are given as suggestions for exercises that may be taken as circumstances permit, or as directions for lines of observation and experimenting that the older pupils may follow independently of class work. There are more real problems for study, relating to the common everyday operations of the farm, than are ordinarily "dreamed of in our philosophies." If a boy (or a group of boys) carries out only one of the exercises, he is doing well and deserves encouragement.

Whenever any of the work is done, it should be carefully recorded by the pupil and attached to this circular. Additional sheets of drawings, mountings, newspaper clippings, and compositions might be added, too, to make a booklet.

Put down the work so well that it may be a neat, creditable and permanent account of this part of your studies in *Agriculture*.

Seed Studies.—(1) Sprout 100 seeds between damp blotters enclosed by two plates, to find the percentage of good seed as well as to learn how the seedlings develop roots and root hairs.

(2) Find out the names of the varieties of barley grown in the neighbourhood.

(3) Compare the grain and heads of different barleys grown locally and learn to distinguish.

(4) Mount samples of grains in glass vials and of heads in small bunches for a wall exhibit at the School Fair.

Plant Studies on School Plots.—(1) Compare the length of time of different sowings to germinate.

(2) Measure the rate of growth from week to week and note the relation of growth to the weather.

(3) Note the extent of *stooling* or *tillering*, i.e., the average number of stems arising from one plant.

(4) Watch for the first evidence of the formation of a head and note the time it takes to make its appearance.

(5) Learn how long it takes for the head to ripen after it appears. Recognize the flowering period and note whether the pollen is gathered by insects.

Local Crop Studies.—(1) Investigate the barley growing of the district and represent the barley fields on a map, showing the kinds, average and yields.

(2) Make inquiries about the local history of barley production—who introduced it, how it was grown in the early days, how it was affected by changes in tariffs, etc.

(3) Investigate the methods of seeding followed on local farms, the time, the preparation of the soil, the machinery used, the distance of the drills apart, the amount of seed sown per acre.

(4) Calculate the cost of producing an acre of barley, allowing for plowing, harrowing, sowing, harvesting and threshing.

(5) Consider the uses and values of barley straw and grain. Note the market quotations.

Plant Studies.—(1) Examine the root systems of barley plants, noting the amount of branching, the probable length of all the roots, and whether they strike down or grow near the top of the soil as *surface-feeders*.

(2) Estimate the relative amounts of grain and straw by weighing a sheaf, threshing out the grain and then weighing the straw and grain. Calculate the answer in percentages.

(3) Calculate the weight of a bushel of grain by filling a pint, quart or gallon measure, level full, weighing and multiplying. If possible, borrow a miller's scales for this. Compare the results obtained with the weight of a standard legal bushel.

(4) Study a head of barley to learn how (a) many *spikelets* there are composing it; (b) their arrangement; (c) how many grains there are in the head, and (d) the relation of the chaff to the grain.

Seed Improvement.—Write to the Secretary of the *Canadian Seed Growers' Association* (L. H. Newman, Esq., B.S.A., Canadian Building, Ottawa), asking for reports and instructions regarding the work of this Association in improving the quality of seed used on Canadian farms. This organization had its commencement in a scheme of seed-selecting competitions for boys and girls in Canadian schools. Boys and girls may still share in its work.

References.—(1) Consult the Report of the *Bureau of Industries of Ontario* (this may be had free on application to the Department of Agriculture, Toronto) to find out the extent of barley growing in the province. Figures are given for each county.

(2) The *Annual Reports of the Ontario Agricultural and Experimental Union*, and the *Ontario Agricultural College* contain the latest information about improved varieties, etc. These reports are to be obtained free from the same source as mentioned above.

(3) In *The Cereals of America*, by Hunt, there is an interesting chapter on barley. This book might be obtained for the school library.

PUPILS' RECORD

OF

THE SCHOOL EXPERIMENT

School..... *Pupil*.....
Teacher.....

	1st Plot	2nd Plot	3rd Plot	4th Plot
Date of Seeding				
Date of Germination				
Height of Straw				
Yield on Plot				
Estimated Yield in bushels per acre				
Quality of Seed				

Remarks : How the work was carried out, difficulties, lessons learned, arrangements for looking after the plot, etc.

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ONTARIO

PUBLICATIONS RELATING TO ELEMENTARY AGRICULTURE, SCHOOL GROUND IMPROVEMENT, ETC.

Copies of these publications are sent to all the schools, and teachers should see that they are retained in the schools for the use of teachers, trustees or pupils. So far as the supply will admit of it, additional copies will be sent to teachers or others requesting the same for personal use. Some of the circulars are for pupils' use; additional copies of these will be furnished free to teachers who make use of them in the classes. Address Director of Elementary Agricultural Education, Ontario Agricultural College, Guelph.

Circular 13	1912	Regulations Relating to Elementary Agriculture and Horticulture in School Gardens with a survey of the Work in Ontario in 1911.
Circular 13A	1912	Children's Gardening. (<i>For Pupils.</i>)
Circular 13B	1912	Normal Teachers' Courses at the Ontario Agricultural College, in Elementary Agriculture and Manual Training, Spring Term, 1912.
Circular 13C	1912	Summer School for Teachers at the Ontario Agricultural College, July, 1912.
Circular 13D	1912	Alfalfa or Lucerne. (<i>For Pupils.</i>)
No. 1 School Chart 13D	1912	Alfalfa or Lucerne.
Circular 13E	1912	On the Best Time to Sow Spring Grains. (<i>For Pupils.</i>)
No. 2 School Chart 13E	1912	On the Best Time to Sow Spring Grains.
	1908	Improvement of School Grounds.
	1909	Plans for Rural School Buildings.